Breath, Self, and World:
Pioneering Meditation Pedagogy

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An Independent Study in Cognitive Science at Vassar College

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Untangle and be free.

-Shinzen Young

All you are, all the universe is, is hearing.

-Tobiah Sola

Acknowledgements

As you can tell from the long list of co-advisors on the title page, several mentors assisted me with this project in a diversity of ways. First and foremost, I would like to thank Ken Livingston for his quality feedback, assistance with the IRB process, experience with conducting experiments at Vassar College, and his contagious passion for the Cognitive Sciences. Thank you Shinzen Young for your groundbreaking work in progressive mindfulness pedagogy; this project is an attempt to flesh out the golden eggs you have already laid. Thank you Soryu Forall for listening to and appreciating my initial ideas and giving me the confidence to pursue the project. Thank you David Vago for inviting me to the Harvard study. The Harvard study not only catapulted my life's vision of meditation research, it also provided me with an opportunity to connect with some of the most wise and fun people that I know today. Thank you Todd Mertz for being a partner in crime. Thank you Har-Prakash Khalsa for two key inspirations: (1) pin pointing Shinzen's full grid as arguably his most powerful and brilliant creation and (2) the importance of resisting dogmatic interpretation of Basic Mindfulness by continuing to evolve it and by not being afraid to push back against parts of the system that don't sit well.

In my view, these two inspirations form the foundation of this project. As you will see, part of what I explore in this project is the sheer power of the full grid as a conceptual framework for understanding and categorizing one's sensory experience (pages 4, 12-13). And as you will see in appendix D, I am interested in changing Shinzen's full grid.

Thank you Gwen Broude for being a beckon of light in the midst of an academic night. Your relation to living and learning is unique, brilliant, and mindful (although you would never call it that). My conversations with you have also inspired appendix D and pretty much the entire section on 'Connections to other Research, Theory, and Methods.' Thank you Randolph Cornelius for coming along for the long ride of this project and for always giving quality advice and stern encouragement. Thank you Carolyn Palmer for inspiring a career in meditation research and affirming the efficacy of breath practice (page 21). Thank you Zosia Krusberg for giving me feedback on the first stages of my pondering and inspiring a career in meditation research.

Abstract

This project is an exploration in mindfulness pedagogy. Pedagogy is the study of *how* we teach. Thus, I explore different ways of teaching mindfulness and then evaluate the merits of each. Broadly, I explore how working with different forms of sensory experience as objects of meditation has different effects on meditators. More specifically, I explore how working with the self (mental image, mental talk, and emotional body sensation) during in-class, guided meditations increases the students' ability to practice during emotionally overwhelming experiences, which in turn creates a reduction of the suffering that often accompanies emotional experience. I also explore how working with one's physical senses (sight, sound, and physical body sensation) during in-class, guided meditations increases the students' ability to practice mindfulness during their daily lives. Throughout the exploration of these two themes, I discuss a variety of interconnected ideas. I use footnote and parenthetical page and appendices references to help the reader see connections between these various ideas.

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My Research

I'm sitting at my desk, waiting for my latest crush to text me back. It's been a while. An uncomfortable and anxious knot arises in my gut and my mind begins to race. 'Does she like me?' 'Maybe I should have said this, instead of this?' 'I probably should have waited another day or two to text her.' As far as I can tell, the world is about to end.

I then remember that mindful awareness can help during such overwhelming emotional experiences, and as I have been practicing for a few months, I decide to give it a shot. I choose the anxious knot in my gut as my object of meditation and begin to open up to and clarify the experience. Within seconds my suffering plummets. I insightfully realize that the anxious knot and racing thoughts are not the entirety of my being. Sure, they exist, but a larger 'I' also exists that is not necessarily caught up in the whirlpool of despair. 'I will live another day!'

While certainly cute, the above personal vignette was also a major psycho-spiritual breakthrough for me. This experience tipped the first domino in a long cascade of introspection, thought, conversation, and research that has stretched out over the last two years.

Over the months that followed this experience, I couldn't help but wonder whether my breakthrough was the result of how I had been taught to meditate. After all, at the time, I had only been meditating for a few months and the level of insight that I had attained seemed significant. I had been learning about mindfulness from an experienced teacher by the name of Shinzen Young. As many of his students can attest, there are an infinity of things that are unique and seemingly effective about the way in which Shinzen teaches. Therefore, I was less interested in finding the facet of Shinzen's curriculum/style of teaching that enabled such an early breakthrough and more interested in identifying a critical piece (among many others) that facilitated my breakthrough. More broadly, I wanted to identify an interesting, powerful, and oft-overlooked aspect of the way in which Shinzen teaches that facilitated my breakthrough.

In order to identify such a facet, I continued to practice, share my experiences with other Shinheads[1], listen to other meditator's experiences, read, listen to lectures, and discuss my ideas with meditators, non-meditators, scientists, and mentors. I decided that I would conduct an experiment when I returned to school in which I would teach different meditation curriculums to separate groups of students in order to observe any variant effects. The task became: which curriculums should I teach and what should I measure?

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[1] The name us students of Shinzen have given ourselves :).

[2] What counts as a distraction obviously depends upon what you chose as your object of meditation.

Several permutations of experimental designs ensued. For example, I wondered whether a central reason that I had such a significant breakthrough so early on in my practice was because of the way in which Shinzen encourages his students to perceive the spatial dimensions of their sensory experience. In other words, does explicitly noticing where a sensory experience resides in space dramatically and quickly increase the application of mindful awareness?

Before I go any further, a definition of mindful awareness is in order. I define mindful awareness as the use of three core attentional skills:

> *Concentration Power: You're ability to remain focused on what you deem relevant at a given time.*
>
> *Sensory Clarity: You're ability to accurately perceive the spatial, temporal, dynamic, relational, qualitative, and quantitative facets of your sensory experience.*
>
> *Equanimity: You're ability to allow sensory experience to come and go without push or pull.*

Now, it is one thing to understand mindful awareness as a concept, but it is quite another to experience it; to taste it in your own first-person, subjective experience. Experiencing mindful awareness will surely aid the reader in understanding the ideas presented in the rest of this piece. Therefore, here is a simple exercise that will give you a taste:

> *Pick a type of sensory experience to focus on. It can be anything from the sounds around you to your breath, a certain mental image or the feeling of your toe. This will be your object of meditation. If your mind wanders from this object of meditation[2] then redirect your awareness back to your object (this 'redirecting' <u>is</u> concentration power). Do this simple exercise for about five minutes.*
>
> *When you feel comfortable, add in this next piece: If you notice that you have wandered from your object of meditation, before redirecting your awareness back, take a moment to literally <u>smile</u>. Think to yourself that it is not a problem that your mind has wandered. In fact, it is perfect! The exercise is literally designed so you find yourself in such situations and you are therefore doing it perfectly. You love yourself and you are your own best friend. Think of all this while you are smiling and really let it sink in. This could easily take twenty seconds or so. Then, finally, redirect your awareness back toward your object. Such smiling and the positive thoughts that go along with it <u>is</u>*

[2] What counts as a distraction obviously depends upon what you chose as your object of meditation. For example, if your object is sound, then your thoughts are distractions. However, if thought is your object, then sound is distraction.

equanimity for you are allowing the experience of distraction to arise without pushing it away. You are now systematically developing two skills: concentration power and equanimity. Keep this up for about another five minutes.

Then, when you feel ready, add in the last piece: While you are focused on your object of meditation, try to clarify your experience in any number of ways. Can you tell if it is getting more intense? Can you tell if it is changing throughout time? Can you tell if it is interacting with one of your other sensory experiences? Directly experience your object. This part of the exercise develops sensory clarity for you are more accurately perceiving the various details of your experience. The exercise as a whole is quite complex now for you always have something to do. Either you are smiling, redirecting, or clarifying and each of these tasks relates directly to one of the constitutive skills of mindful awareness: equanimity, concentration power, and sensory clarity, respectively.

OK, now back to my experiment.

After pondering and sharing my ideas with an inordinate number of people, I decided on the following experimental design. There would be two groups of meditators. Both groups would get the same conceptual definition of mindful awareness (the one outlined above). Both groups would also get the same reasons for practicing mindfulness (which are: increase fulfillment, decrease suffering, and be more kind). Both groups would get the same instructions for practice in daily life (which is: chose objects of meditation that are relevant to what you are doing at the time. For example, if you are in lecture, use the professor's voice as an object of meditation). Both groups would get the same instruction for practicing during an overwhelming emotional experience (which is: either 'turn toward' the experience - for example, chose an anxious knot as your object – or 'turn away' from the experience - for example, chose the sound around you as an object, which has little to do with your overwhelming emotional experience). Both groups would meet once a week for an hour-long class ten times throughout the fall semester.

What was different between the two groups? You may ask. The groups differed in the variety of sensory experiences that they got practice meditating upon in class, during guided meditations. One group (whom I call the 'Breath' group) worked with the breath as their object of meditation for the whole semester. The other group (whom I call the 'Full Grid' group) worked with a wide variety of sensory experiences as objects of meditation (everything from mental talk to physical sound, emotional body sensation to physical body sensation, etc.). I call this second group the Full Grid group because I used the visual aid of a grid with the group to help keep track of and conceptualize the different types of sensory experience that we were learning to use as objects of meditation. Here is the Full Grid:

	Internal, subjective	External, objective	Restful
Visual	Mental image	Physical sight	Absence of mental image, a relaxed gaze, the grey-scale blank
Auditory	Mental talk	Physical sound	Absence of mental talk, the absence of physical sound,
Bodily	Emotional body sensation	Physical body sensation	Absence of emotional body sensation, the absence of physical body sensation, physical relaxation

Table 1: The Full Grid, a 'periodic table of sensory elements'.

To summarize, it seemed to me (I will re-evaluate this below) that the independent variable in this experimental design was: work with one kind of sensory experience (the breath) vs. work with a variety of sensory experiences (the Full Grid). Remember what I said on page 1 of this piece:

> *I was less interested in finding <u>the</u> facet of Shinzen's curriculum/style of teaching that enabled such an early breakthrough and more interested in identifying <u>a</u> critical piece (among many others) that facilitated my breakthrough. More broadly, I wanted to identify an interesting, powerful, and oft-overlooked aspect of the way in which Shinzen teaches that facilitated my breakthrough.*

'One kind of sensory experience' vs. 'a variety of sensory experiences' seemed to fit the bill as an independent variable in that it seemed interesting, powerful, and oft-overlooked. Importantly, I have never thought that this independent variable was <u>the</u> facet that facilitated my breakthrough, but simple <u>a</u> facet (among many others, which are listed in the second-to-last paragraph on page 3).

I decided to look for three effects (my dependent variables): Which group would have deeper, more meaningful experiences during in-class, guided meditations? Which group would experience the most suffering reduction during overwhelming emotional experience? Which group would have the most ease incorporating mindfulness into their daily lives? I would measure these effects using four sources of data: a pre and post questionnaire[3]; 'Significant Experience Info Sheets' that asked participants to document their experiences trying to apply

[3] See Appendix A for a full version and discussion of the questionnaire.

mindfulness to emotional episodes[4]; in-class student reports; and out-of-class, informal student reports.

However, I also adopted a kind of exploratory openness to whatever came out of the experiment. In other words, I tried not to be too wedded to looking out for only my dependent variables and to instead, simply be open to what would come out of the experience of teaching two groups of participants different kinds of meditation. After all, I may run into interesting trends that I hadn't thought up before running the experiment and I wanted to notice them.

All this being said, I kept in the back of my mind the independent and dependent variables listed above and the following hypotheses: First, I expected the Breath group to report deeper, more meaningful experiences during the in-class, guided meditations. This was because I thought that while working with just one form of sensory experience for the entirety of the semester, the participants would have a chance to really 'sink their teeth' into the breath. Second, I expected the Full Grid group to report greater suffering reduction during emotional experiences and have an easier time practicing in their daily lives. I thought that the Full Grid group would have greater ease incorporating mindfulness into their daily lives because they would get practice meditating upon many forms of sensory experience and life is, after all, comprised of many forms of sensory experience (we see, hear, and feel all sorts of stuff in our selves and in the world around us). I thought that the Full Grid group would also report more suffering reduction during emotional experience because they would get practice being mindful of themselves (mental image, mental talk, and emotional body sensation), which – to over simplify - is what is necessary in order to reduce suffering during emotional experience.[5]

The careful reader may have noticed that my story is getting ever more complex. I began talking about my suffering reduction during an overwhelming emotional experience and thinking about what allowed me to achieve this. Now I am talking about all sorts of things including 'ease of practice in daily life' and 'deep and meaningful experience during in-class, guided meditations.' These added interests are simply the result of pondering. As I said towards the beginning of this piece, my breakthrough emotional experience was the first domino in a cascade. Here we see the cascade getting more varied. I am now not only interested in suffering reduction during emotional experience, but also the other dependent variables listed above. My reasoning for also being interested in these other variables is quite simple: I think these other applications of mindful awareness are important and I think that the way in which Shinzen teaches mindful awareness also has a powerful affect on these variables.

Long story short, I acquired a list of randomly selected emails from the Vassar College student body and was able to recruit a total of 23 participants.

[4]See Appendix B for full versions of the Info Sheets.

[5] See Appendix C.

Schedules were juggled, rooms reserved, funds for tasty snacks secured, and before I knew it, I was in the midst of my experiment. And here…is what I found.

Pre - Average Daily Life Score (n=11)	4.69
Pre - Average Emotion Score (n=11)	2.86
Post - Average Daily Life Score (n=6[6])	3.54
Post - Average Emotion Score (n=6)	3.04
Change in Average Daily Life Scores	-1.15
Change in Average Emotion Scores	0.18
% of Class who submitted Significant Experience Forms	25

Table 2: Results from the Breath group questionnaire.

Pre - Average Daily Life Score (n=12)	3.42
Pre - Average Emotion Score (n=12)	2.75
Post - Average Daily Life Score (n=8)	4
Post - Average Emotion Score (n=8)	3.19
Change in Average Daily Life Scores	0.58
Change in Average Emotion Scores	0.44
% of Class who submitted Significant Experience Forms	58.33

Table 3: Results from the Full Grid group questionnaire.

In the tables above, the higher the number, the greater the proficiency at either practice during emotional experience or practice during daily life.[7] As you can see, the Full Grid group had *higher* post average daily life scores, post average emotion scores, change in average daily life scores, and change in average emotion scores. To me, this is evidence in support of my hypotheses. Namely, at least according to the questionnaire data, the Full Grid group seemed better able to apply mindfulness to their emotional experience in order to reduce their suffering and they were better able to apply mindfulness to their everyday lives.

Also, as you can see, the fraction of the Full Grid class that submitted to me Significant Experience Info Sheets is *higher* than the fraction of the Breath class that did so. As these questionnaires asked participants to document the application of mindfulness to emotional experiences, one might conclude that this data is further

[6] Throughout this study, you will see less than optimal numbers of participants who submitted questionnaires, turned in other forms of data, etc. Such is life.

[7] Again, see Appendix A for a full version and discussion of the questionnaire.

evidence of the Full Grid group's greater engagement with mindfulness in the context of emotional experience.

Both my in-class and out-of-class interactions with the groups aligned with the trends we are starting to see. First, several (probably a third) of the participants from the Full Grid group reported significant suffering reduction during an overwhelming emotional experience. What I mean by this is that a third of the Full Grid group came to me with stories that closely resemble the personal vignette that I began this piece with. This is, of course, a very subjective and fuzzy data collection and interpretation process. However, I have been teaching meditation for two-and-a-half years now and am therefore relatively adept at listening to student reports in order to get a good sense of what, exactly, they experienced. Also, such fuzziness is the inevitable nature of qualitative research.

Second, several of the participants from the Full Grid group seemed to have ease applying what we learned to their daily lives. For example, I will never forget when one participant ran up to me during a concert and said, 'I'm about to focus on physical sound so hard!' Such an exclamation conveys a serious intention to practice mindfulness during a busy time, which is quite impressive. I rarely if ever had such interactions with participants from the Breath group.

However, the difference between the Full Grid group's and the Breath group's ability to apply mindfulness to their daily lives was not as great as the difference between the Full Grid group's and the Breath group's ability to reduce their suffering during emotional experience. In other words, the Full Grid group seemed far better at reducing their suffering than the Breath group, but seemed only slightly better at incorporating mindfulness into their daily lives. While this trend is not supported by the questionnaire data above (the difference between the Full Grid group's and the Breath group's change in average daily life score is greater than the difference between the Full Group's and the Breath's group's change in average emotion score) it is supported by both in-class and out-of-class participant reports, which I find to be more reliable.

One last note about the results from this first experiment. Notice that the Breath group's change in average daily life score is negative (-1.15). This means that the Breath group may have lost confidence in their ability to practice in daily life over the coarse of the experiment. Initially, this may seem preposterous and flat out wrong. After all, as a teacher who heard story after story from participants in this group about their ability to practice in daily life, this data doesn't seem to make any sense. However, I will put forth a possible explanation. Perhaps the participants, after learning what practice in daily life actually meant, heightened their standards for what it means to practice in daily life over the coarse of the semester. If so, even though their abilities had, in fact, progressed, their confidence in their abilities could still have declined. I'm not sure if this is an adequate or accurate explanation, but I think it is certainly possible and could perhaps be the basis for further research.

Thus, by the end of this first experiment, I felt relatively confident that I had 'proven' (whatever *that* means!) my hypotheses. The group that had practice working with a variety of sensory experience seemed better able to reduce their suffering during emotional experiences and seemed better able to incorporate what they had learned into their daily lives.

The careful reader may have noticed the exclusion of one of my hypotheses in this analysis. Namely, I have not talked about my hypothesis that the breath group would experience deeper, more meaningful states during guided meditations. To be honest, this hypothesis more or less fell by the way side simply because both my participants and me had enough swarming around our mindful heads. Such is life. However, I will report the following, though I am not sure it is reliable or of considerable significance. By far the two strongest reports of deep and meaningful experiences during the guided meditations came from two participants in the Breath group toward the end of the study. I heard nothing to the same effect come out of the Full Grid group. So we have some evidence in support of the 'Breath group going deeper hypothesis.'

Yet a nagging voice in my head wouldn't shut up. 'You know, Toby. You don't really know exactly what allowed the Full Grid group to excel. Yes, they got a chance to practice with a variety of sensory experiences, but that's not the only thing that was unique about their curriculum. Something else that the Full Grid group got was the conceptual framework of the full grid (Table 1). This grid may have helped this group conceptualize and categorize their sensory experience both during daily life and during emotional experiences in a powerful way. Thus, the differences that you saw may have been more attributable to the presentation of the full grid as a conceptual framework for understanding experience than to the actual practice that the participants got in class.'

In other words, I began to realize that there was more than one independent variable in the experiment that I had run; there was more than one thing that differed between the groups. One thing that differed was the variety of experiences that each group got practice meditating upon in class and another thing that differed was the presentation of a conceptual framework for understanding and categorizing the entirety[8] of one's moment-by-moment sensory experience. I therefore could not in good conscious ascribe my results specifically to just one variable - to just the variation in types of experience focused upon - for the results might have been caused more by the presentation of the full grid as a conceptual framework.

Luckily, I had the time and energy to run another experiment. I also had an awesome group of meditators that I was done experimenting upon, who shared common terminology and experience, and that I could talk to. Over the coarse of a few weeks, I revealed everything that I had been thinking about to the participants

[8] See Appendix D

from my first experiment and asked them for their thoughts on what I should do next. How might I tighten up the experimental design to really only focus on one independent variable? This is what we decided upon.

In the second experiment, there would be three groups. All groups would get the same conceptual definition of mindful awareness (the one outlined on page 2). All groups would get the same reasons for practicing mindfulness (which are: increase fulfillment, decrease suffering, and be more kind). All groups would get the same instructions for practice in daily life (which is: chose objects of meditation that are relevant to what you are doing at the time). All groups would get the same instruction for practicing during an overwhelming emotional experience (which is: either 'turn toward' the experience - for example, chose an anxious knot as your object - or 'turn away' from the experience - for example, chose the sound around you as your object, which has little to do with your overwhelming emotional experience). And here is the important part that is the main difference between the first experiment and the second experiment: *All groups would learn the periodic table of sensory elements as a conceptual framework for understanding and categorizing their experience* (Table 1).

What was different between the two groups? You may ask. This time, really, the only thing that was different between the three groups was the type of sensory experiences that they got practice meditating upon during in-class, guided meditations. One group only worked with breath (and I thus call them the 'Breath' group). One group worked with the breath and mental image, mental talk, and emotional body sensation (and as these experiences comprise the self-system, I call them the 'Self' group). One group worked with the breath and physical sight, physical sound, and physical body sensation (and as these types of sensory experiences are how we sense the world around us, I call them the 'World' group).

My hypotheses in relation to this second experimental design were the following: The Breath group would have the deepest, most meaningful experiences during in-class guided meditations. I thought this for the same reason that I thought this earlier (practice with only one of form sensory experience may facilitate a high level of concentration on the object, which often produces deep and profound experience in meditators). The Self group would report the most suffering reduction during emotional experiences. I thought this may occur because the self-system is where emotion manifests and so if you get substantial practice working with the various components of the self-system in class, you may be better able to be mindful of it during an emotional experience (which is what is necessary to decrease suffering).[9] Lastly, the World group would report the most ease practicing in daily life. I thought this because meditating upon what one sees, hears, and feels simply makes practical sense in daily life and this group was going to get ample practice with these objects of meditation.

[9] Again, see Appendix D.

As you can see, I made the experimental design tighter and simpler in several key ways. First and foremost, as I discussed above, really the only thing that varied between the groups is what types of sensory experience each got practice with meditating upon in class, during guided meditations. Second, the greater prospective ability to practice during emotional experiences and daily life was split up between two groups; I created a simplifying 'division of labor' for my participants and me. I expected the Self group to be better at practicing during emotional experiences and I expected the World group to be better at practicing during their daily lives. This second simplification was made in order to simplify the curriculums that each group would be taught for several participants from the Full Grid group in the first experiment expressed being overwhelmed with material, unable to really sink their teeth into any of it.

Also, with such a 'three group' experimental design, I could be more confident in linking specific curriculums to specific effects. This is because each group had only one curriculum and one corresponding effect that I was looking for. The Self group would be better at emotional experience and the World group would be better at practicing in daily life. Compare this to my first experimental design, where I had one curriculum and two effects that I was looking for (the Full Grid group would be better at emotional experience *and* daily life).

All these hypotheses being said, once again, I tried to simply keep them in the back of my mind while being open to whatever came out of the experiment. I was teaching significantly different forms of meditation and I was most interested in anything and everything the participants from the various groups had to report.

Once again, a random list of email was acquired and this time, 33 participants were recruited.[10] Nine students were placed in the Breath group, 15 in the Self group, and 9 in the World group. Such uneven class sizes are obviously not optimal, but college students have busy schedules and several participants could only make one or two class times.

Because of the greater value that I found in the in-class and out-of-class reports from participants in the first experiment, I decided to emphasize this form of data collection in the second experiment. I did so by interviewing, one-on-one, each participant about her or his experience at the end of the semester. I also handed out a questionnaire at the end of the semester. And…this is what I found.

The questionnaire data from the second experiment seems less revealing than the questionnaire data from the first experiment. See Appendix E for an exploration of this data. What I found more interesting and revealing was the end-of-semester interviews with the study participants. I opened each interview by asking relatively open-ended questions such as, 'What interested you while

[10] There were actually quite a few more, but interview data from only 33 of the participants was collected because of participant dropouts, schedule conflicts, ect. Again, life happens.

answering the questionnaire?' and simply listening to what the participants had to say. In this way, I heard what caught their attention and what was most impactful and/or memorable for them. This mimics my general (non-hypothesis wedded) interest in the raw experience of my participants.

I then asked participants my two central questions: 'How did it go practicing during emotional experiences?' 'How did it go practicing in daily life?' In terms of the emotion question, again, I listened for reports that mimicked the personal vignette with which I opened this piece. In other words, I listened for a substantial shift in the participant's relation to their emotional experience and the suffering reduction that accompanies such a shift. In terms of the daily life question, I listened for reports that conveyed at least several instances of serious engagement with the practice of mindful awareness in daily life. Both of these calls are, of course, tricky and fuzzy things to define, but again, I have ample teaching experience and am relatively apt at gauging the experience of other meditators. And again, such fuzziness is the inevitable nature of qualitative research. I coded up the interviews and this is what I found.

Group	% of Group that Reported Proficiency in Emotion
Breath (n=9)	67
World (n=9)	78
Self (n=15)	87

Table 4: Results of interviews about practicing during emotional experience.

Group	% of Group that Reported Proficiency in Daily Life
Self (n=15)	67
Breath (n=9)	100
World (n=9)	100

Table 5: Results of interviews about practicing during daily life.

As you can see, the Self group seemed to have the most ease engaging the practice during emotional experience. This 'proves' (again, whatever *that* means!) my hypothesis. Also, as you can see, 100% of the World group was able to attain proficiency in practicing during daily life. This 'proves' my other hypothesis!

However, 100% of the Breath group also reported proficient practice in daily life. And this trend actually matches what I saw in the first experiment with that

Breath group finishing close behind the Full Grid group in regards to practice in daily life. This is very interesting to me. What I gleam from this finding is the following. These data seem to reveal that experience meditating upon one physical sense easily translates into another physical sense. For example, practice with sound makes practice with body sensation easier; practice with sight makes practice with sound easier; etc.

So, and this is a big 'so,' what my research reveals is that you need to do formal practice with the self-system if you want to learn to be mindful of yourself. However, you only need to do formal practice with *one* physical sense if you want to learn to be mindful of the world around you. I conjecture that this has to do with how vague, fleeting, and abstract the components of the self system are. The only way you can expect yourself to keep track of the vague self is if you sit yourself down in a quiet room and formally practice keeping track of the system. However, one's physical senses are relatively straightforward (everyone can relate to hearing things with their ears, seeing things with their eyes, and feeling things with their body). The physical senses are not vague, fleeting, and abstract. Therefore, practice with one physical sense (such as the feeling of breathing) easily translates into practice with sound or sight, but not necessarily practice with the self-system.

So both my hypotheses seem to be supported by my interview data.[11] However, I would like to draw the reader's attention to the high percentage of participants who were able to practice during emotional experience and daily life in all the groups, no matter what their curriculum was. For example, 67% of participants from the Self group were able to practice in daily life and 67% of participants from the Breath group were able to practice during emotional experience. These numbers are over half and not insignificant.

To me, such high numbers across the board is testament to the power of the invariant aspects of the curriculum that all groups got. These include: the full grid as a conceptual framework for understanding and categorizing one's sensory experience; the turn towards/turn away directions for practice during emotional experience; concentration power, sensory clarity, and equanimity as a conceptual framework for defining *what* mindful awareness is; increase fulfillment, decrease suffering, and be more kind as a conceptual framework for understanding *why* to practice mindful awareness. Such invariant aspects of the curriculums seemed to be effective and contributed substantially to the general success of all groups. And recall what I said on page 1 of this piece:

> *As many of [Shinzen's] students can attest, there are an infinity of things that are unique and seemingly effective about the way in which Shinzen teaches. Therefore, I was less interested in finding <u>the</u> facet of Shinzen's curriculum/style of teaching that enabled such an early breakthrough and*

[11] Again, my third hypothesis regarding the Breath group's ability to attain deep and meaningful states simply fell by the way side.

more interested in identifying a critical piece (among many others) that facilitated my breakthrough.

I think that my data supports what I said here: there are a ton of things that are unique and effective in the way that Shinzen teaches (the full grid, turn toward/turn away, etc.); these effective aspects of the invariant curriculum caused high levels of success in all groups; the type of sensory experience that participants got to practice with certainly had an effect, but the rest of the curriculum was nonetheless doing a lot of the work.

As I mentioned above, I was also very interested in hearing anything and everything the participants had to say, even if it did not directly relate to my hypotheses. While listening through the interview data a second time, I couldn't help but notice the following themes.

61% of participants specifically mentioned how helpful it was to meditate upon emotional body sensation during an emotional experience.

The group-by-group break down was:

67% of the Self group reported this.
56% of both the Breath and the World group reported this.

61% of participants reported success and fun meditating upon sound during their daily lives.

42% of participants reported success and fun meditating while walking.

21% of participants reported success in applying their attentional skills to help them focus on their homework.

18% of participants said that the concept and practice of equanimity had a profound impact on their lives.

15% of participants said that they often practiced before going to bed.

One thing to keep in mind while interpreting the above figures is that I did not ask explicitly about any of these themes during the interviews. Instead, the participants mentioned these themes in response to open-ended questions. Thus, the above figures are not meant to convey that the other participants would disagree with the said theme if they had been asked about it explicitly, but that they simply didn't think to talk about the theme while answering an open-ended question. With this qualification in mind, the above percentages are relatively high and thus represent themes that really saturated the experience of several of the participants.

I'd like to say a few words on each of the above themes. The fact that most participants specifically mentioned how helpful it was to meditate upon their emotional body sensation to me conveys the key role that emotional body sensation plays in creating suffering during emotional experience. Emotional body sensation seems to cause lots of suffering if you are not mindful of it and if you are mindful of it, your suffering can be greatly reduced. Further, even more participants from the Self group reported working with emotional body sensation than the other groups. This conveys a similar story as the general conclusions described above surrounding practice with a type of experience easing more general applications of mindfulness to that type of experience.

I realize that the tone of this piece may come off as some what crude. Indeed, it sounds strange to talk about emotional experiences with technical and simplistic terms such as, 'suffering reduction.' I realize this and want to say that I have chosen to use such a tone because of the nature of my project. This is an experiment, not a therapy session and it seems to be that the terms one uses should match the context.

Yet we are at a point in the discussion where I think it would be appropriate to deviate from such technical and simplistic terminology in order to enjoy a sojourn into complexity and human meaning. There is more to be mindful during an emotional experience than simple suffering reduction. When one is mindful during an emotional experience, not only does one's suffering decline, but the emotions are allowed to do what they are meant to do, which is inform the subject. The reason that we have emotion is to provide ourselves with information during overwhelming circumstance. For example, if you see a tiger, experiencing a terrifying emotional body sensation helps you understand the situation that you are in and also helps you choose to run. Similarly, if you are wondering whether you should breakup with your girlfriend, a powerful emotional body sensation that pulls you toward her is useful information. Mindfulness not only reduces the suffering associated with these experiences, but it also allows the information to make it to the subject and facilitate more appropriate actions.

This directly relates to equanimity.[12] Equanimity is one's ability to allow sensory experience to come and go without push or pull. If we greet our emotions, and I would highlight our emotional body sensations, with equanimity, this means that our emotions are allowed to arise, run around, and leave as they wish; they are not constrained and ignored and pushed away; when you let your emotions speak, you can hear them and they therefore turn into a well of valuable information. A similar sentiment (specifically in regards to mining one's body as a source of valuable information) is conveyed in Mark Johnson's book, *The Meaning of the Body* (2007).

[12] Also, see Appendix C for further wonders of equanimity.

The fact that several participants mentioned sound in relation to practice in daily life conveys to me that sound is a great object of meditation for practice in daily life. Participants seemed to gravitate toward it. The fact that several participants mentioned walking in relation to practice in daily life conveys to me that walking is a great situation/context to work on incorporating mindfulness into one's daily life. The fact that several participants mentioned mindfulness helping them with their homework conveys to me the potential use of mindfulness in schools as a systematic way to improve study skills. The fact that many participants reported the power of equanimity in their lives conveys to me both the uniqueness of this perspective (most people in modern America are simply not exposed to such a perspective, we, as a culture, just don't have anything quite like it) and the value of the perspective.[13] The fact that several participants mentioned that they practiced before going to bed coveys to me that this is a great time to fit it into a busy schedule.

And here are a few funny quotes from the interviews:

"[Mindfulness] just made everything cooler"

"Equanimity is cool"

Yes, I have an affinity for the word 'cool'; it's a cool adjective :).

In conclusion, over the coarse of these two experiments, I have discovered that working with the components of the self (mental image, mental talk, and emotional body sensation) in class, during guided meditations helps meditation students to practice during overwhelming emotional experience. I attribute this effect to the fact that practice with the self system eases the application of mindfulness to the self system and mindfulness of the self system is what is necessary in order to reduce suffering during emotional experience.[14] I have also learned that working with the physical senses (sight, sound, and physical body sensation) in class, during guided meditations helps students incorporate their practice into their daily lives. I attribute this effect to the fact that practice with the physical senses eases the application of mindfulness to one's daily life for being mindful of one's physical senses during daily life makes practical sense. More generally, I have learned that formal practice with a specific type of sensory experience eases the application of mindfulness to that type of sensory experience.

However, I am not naive enough to even begin to talk about some kind of cookie-cutter meditation curriculum or any kind of one-size-fits-all mentality. The numbers and reports discussed above describe trends that I saw in groups of people and not trends that I saw in individuals per say. What a student of meditation is taught should depend upon a number of factors including their experience, interest

[13] Also, see Appendix C.

[14] But see Appendix C.

level, self-confidence, and their available time. I hope that my findings can be interpreted not in some kind of mechanistic way but instead, as some things for meditation teachers to keep in the back of their minds when students ask questions and give reports. Through this study, I hope to convey that in general, most people are better able to practice during emotional experiences if you give them formal in-class opportunities to work with the sensory elements that make up the self. I am not saying that this is the only way or should be done first; it's just a trend that I saw in these data. I also hope to convey that in general, for most people, formal practice with one's physical senses as objects of meditation helps with transitioning into practice in daily life. This is not the only kind of formal practice that is important for practice in daily life nor should it necessarily even be the first thing to try with certain students. Again, these are trends that I saw in a specific group of people, so please interpret my results carefully and do not over apply them.

Relation to other Research, Theory and Methods

There is a growing trend in the Cognitive Sciences to incorporate phenomenological and first-person, subjective data into research (Price and Barrell, 2012: 4-5, 30). Gallagher and Zahavi, in their book, *The Phenomenological Mind* provide several reasons for such incorporation. Most simply, all knowledge (including scientific understandings) are embedded in the world of experience. Therefore, if we wish to understand the performance and limits of the scientific method, we should become intimately familiar with the first person, subjective experience of the world "of which science is a higher-order articulation" (Gallagher and Zahavi, 99). In other words, while us scientists may use yard sticks and fMRI machines to gather 'objective' data about the world, the conclusions we draw are still fundamentally (inter)subjective and we should therefore become acquainted with our subjectivity so we can do better science.

Gallagher and Zahavi especially drive home the importance of first-person, subjective data in relation to the Cognitive Sciences through their discussion of David Chalmers's 'hard problem' and 'easy problems' of consciousness. Chalmers introduced these ideas in the 1990s in his book, *The Conscious Mind*, which sparked intense debate within Cognitive Science circles. According to Chalmers, the easy problems of consciousness include how we process information; react to our environment; and how we engage in cognitive processes such as discrimination, categorization, and introspection. While Chalmers recognizes that we are far from complete understandings of such processes, he asserts that at least our current scientific methods are up to the challenges. In other words, we can figure such problems out with yardsticks and fMRI machines.

Simply put, the hard problem of consciousness is: how in the heck does conscious experience arise from a pile of flesh? And Chalmers insists that our current scientific methods are fundamentally inadequate for addressing this harder problem. Chalmers is certainly being progressive relative to Cognitive Science as a whole as he points directly to first-person, subjective experience and calls attention to the inadequacy of current scientific methods.

However, Gallagher and Zahavi push us even further by asking: is it even possible to study the easy problems (discrimination, categorization, introspection, etc.) while leaving out the first person, subjective experience of such phenomena? After all, aren't each of these phenomena first-person, subjective experiences in the first place? Gallagher and Zahavi brilliantly point out that Chalmers falls prey to the very reductionism that he is trying to oppose by separating easy problems from the hard problem of consciousness. According to Gallagher and Zahavi, most problems

in Cognitive Science are hard problems for most are fundamentally first-person, subjective experiences.

Therefore, if we are to make any substantial strides forward, we must put first-person, subjective experience front and center on the Cognitive Science stage. Of course its tricky business keeping track of and studying your first person, subjective experience, so no one's saying it will be a smooth ride. However, phenomenologists have been at it for a long time and we therefore have reliable and time-tested tools for the job.

My research is within this vein of taking the first-person, subjective experience seriously, as a source of valuable data. In deed, I asked participants about their subjective experience and this qualitative data was what I analyzed in order to arrive at my results. Further, my research begins to relate the fields of phenomenology to mindfulness meditation. As we explored above, mindfulness meditation - at least the form of mindfulness that I taught my participants - was centered upon the keeping track of one's first-person, subjective experience. This is directly relevant to phenomenological methods of introspection. Thus, I hope my research can be interpreted in ways that help connect these already closely related fields. I also hope that future research more directly explores the relationship between these two fields in order to encourage beneficial cross-pollination between the fields.[15]

There is also growing consensus in neuro-phenomenology that the researcher should incorporate their own first-person, subjective experience into the development of experimental design, hypothesis development, and the interpretation of results (Price and Barrell, 2012: 16, 26). This is helpful for a number of reasons, not least of which is the fact that the field of phenomenology is, by definition, interested in exploring the first-person subjective perspective. For researchers not to explore their own experience would be for those researchers to disregard literally the only direct access they have to the very phenomena they seek to explore.

My research parallels this method in several ways. First and foremost, the entirety of this project was inspired by the personal insight that I opened this piece with. From this personal experience, grew a wealth of ideas, experimental designs, hypotheses, and results.

Also, within the field of Enactive Cognitive Science, there is an interest in looking at how agents act in and experience the 'real' world (as opposed to how agents act in and experience a laboratory setting) (Rose and Abi-Rached, 2013: 76-77, 228). This interest is again valuable for a number of reasons. Perhaps most importantly, this interest stems directly from the realization that if we wish to apply the results of experiments to the lives of agents living in the world, our experiments

[15] Also, see Appendix D for another discussion of such cross-pollination.

need to take place in the real world. Otherwise, there is a great risk of non-applicability. For example, an agent may act a certain way in a lab, yet act in a different way in the real world, so of what use is data about an agent in a lab if we are, at the end of the day, interested in how agents act in the real world?

My research aligns well with this trend in Enactive Cognitive Science because the data that I analyzed came from agents in the real world. For example, I asked them about their experience during over whelming emotions and while trying to implement mindful awareness in their daily lives. There is simply not a lab in sight in either of these contexts. Instead, the world, the participant's world, was the lab and this setting makes my analyses more applicable to the (extra-lab) human condition.

Another theme in Enactive Cognitive Science, Dynamic Systems Theory, and Ecological Psychology is the assertion that mind is co-constituted by brain, body, and environment. In other words, if you want to understand everything about the mind and how it works, you need to study the dynamic interactions between the brain, body, and the environment (Reed, 1996). This position is put forward in opposition to the Classical Cognitivist assertion that you can understand the mind and how it works while ignoring the body and the environment.

My research, and more specifically, the types of meditations that taught my students may relate to this debate in an interesting and unique way. Perhaps the first-person, subjective experience of meditating upon a sound or sight may provide some kind of insight into the role that the environment plays in the functioning of the mind? After all, during moments of high concentration, what happens is the following: all you are, all the universe is, is hearing. If mind is co-constituted by environment, such an experience of mind merging with/becoming environment seems like it could provide valuable insights in regards to this theme. Here again, we see an example of the possible cross-fertilization of meditation and cognitive science.[16]

I realize that the last two paragraphs may sound absolutely ridiculous. I know. They are 100% speculative. However, as I said at the beginning, actually practicing mindfulness may increase one's ability to understand many of the ideas and propositions that I am putting forth in this project.

A common critique of much of the Behavioral Sciences is that when researchers are wedded to their hypotheses, they miss important information and, even worse, end up designing experiments that are self-vindicating (Rose and Abi-Rached, 2013: 88). My research is aware of this critique. Such awareness is evident in the way in which I simply kept my hypotheses in the back of my mind and also analyzed data that did not relate directly to my hypotheses.[17]

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[16] And see appendix D for another example.

[17] See pages 10 and 13.

My research is also relatively unique within the context of research on mindfulness and meditation. By far, most research on mindfulness looks to compare 'mindfulness' with 'no mindfulness'. In other words, the independent variables in most mindfulness research experiments are the presence or lack of mindfulness meditation.

Instead of comparing mindfulness to no mindfulness, my research compared different types of mindfulness. I made this decision for a number of reasons. Most importantly, there is a wealth of research that already exists that supports the various positive benefits of mindfulness (Carlson, 2013; Koole, 2009; Birnie, 2010; Dekeyser, 2008; Shapiro, 1998; Vago, 2012; Emanuel, 2010; Papies, 2012; Vago, 2012; Barnes, 2007; Wachs, 2007; Carson, 2004; Lakey, 2008). It is relatively well established that mindfulness can have a host of positive benefits. Therefore, to me, supporting this claim seems less interesting and less important. What I became interested in was the differential effects of various types of meditation, for there is a wide variety of practices and conceptual frameworks associated with mindfulness and they can't all have the same effects. Although there has been some research within this vein (Tomasino, 2013; Sedlmeier, 2012; Eberth, 2012; Parker, 1978; Warrenburg et al., 1980; Peng, 2004), it is few and far between. A central aim of my research is to help fill in this knowledge gap.

And this is why the subtitle of this piece is 'pioneering meditation pedagogy.' There simply isn't that much out there on the differential effects of meditation curriculums. What is out there often uses two basic categories of meditation practice: focused attention and open awareness. All of the meditations that I taught are examples of focused attention because participants were instructed to intentionally redirect their attention back to objects of meditation.

One way to interpret my research is that I am calling for a more detailed classificatory schema for meditation research. I think that researchers should not stop at distinguishing between focused attention and open awareness. I think that they should distinguish between types of focused attention by labeling what types of sensory experience is focused upon. The central reason for such a detailed classificatory schema is that, as we've seen, meditating upon different types of sensory experience can have substantially different effects on meditators. More specifically, the type of sensory experience that is focused upon affects the ease of practice during emotional experience and the ease of practice in daily life. These effects are significant and researchers should be aware of such differences when they are comparing notes.

It is important to understand that I was not exploring whether or not mindfulness has a positive effect on the dependent variables that I measured. I did not set up my experiment to prove this, for there is a wealth of research that already does. This is why I did not have any kind of control group that did not get any mindfulness instruction. Also, I did not have a control group because the questions

that I asked participants simply would have made no sense to people who had not been taught mindfulness. For example, I asked questions such as, 'How did it go practicing mindfulness during emotional experiences?' and 'How did it go incorporating mindfulness into your daily life?' and 'How well were you able to be mindful of your self-system?' Without training in mindfulness, these questions are simply unanswerable. Again, what I was comparing was different mindfulness curriculums and not 'mindfulness' to 'no mindfulness' (Cornelius, 2014).

In a way, though, the Breath groups during both of the experiments acted as a kind of control group as breath meditation is a commonly found curriculum. In other words, one way to look at my research is that I tested a variety of mindfulness curriculums against a control breath curriculum. However, my Breath groups were not optimal control groups. This is because simply paying attention to the breath slows the breath, which then causes significant shifts in one's physiology and attention. Thus, there was a sneaky independent variable running around after all. On the one hand, Self and World groups didn't practice much with breath (and thus weren't experiencing the specific shifts in physiology and attention associated with breath work) and on the other hand, the Breath group did get ample practice with the breath (and thus did experience such shifts in physiology and attention). I tried to mitigate this sneaky independent variable by instructing the Breath groups to not slow their breath, but to simply pay attention to their breath. My hope in doing this was that the physiological and attentional changes associates with slowing the breath would be minimized. However, there is research that shows that simply paying attention to the breath slows the breath (and student reports certainly supported this) (Cornelius, 2014).

I must admit a personal (and I think admirable) reason for creating Breath groups in both experiments. I mainly learned mindfulness meditation from Shinzen and, as we've seen, one of the things that is unique about the way in which Shinzen teaches is that he gives his students a wide variety of sensory experiences to use as objects of meditation. After learning mindfulness in such a way, I found it questionable that so many other mindfulness teachers only used the breath. 'Why do they keep it so simple?' 'Is the something about the breath that is especially helpful?' I thought to myself.

In order to answer these questions, I created Breath groups that would provide me with ample experience practicing and teaching the breath. And after a year of doing so, I am so happy that I did so for I have found answers to my questions.

I do think that there is something special about the breath. Most importantly, it is directly tied to our limbic system and so simply paying attention to it immediately shifts our physiology. I came to view the breath as a kind of arousal gearshift. At anytime, I could throw my physiology (and thus my mental state) into a low gear by paying attention to my breath. This is very useful. Also, as I mentioned above, both breath groups were able to practice in daily life almost as

well as the groups that got to work with their physical senses. To me, this conveyed how well the breath practice translates into being mindful of other physical senses. I now appreciate the breath more than I did a year ago and I think that Shinheads should be careful to discount breath practice for these reasons.

All of this being said, remember that the Breath Groups did, in general, have a harder time practicing during emotional experience. Thus, while I think Shinheads should pay more attention to the breath, I also think most mindfulness meditators could use a dose of variety of objects of meditation in their practice. In other words, and to put it bluntly, my results could be interpreted to mean that Shinheads should do more breath work and people who mainly work with breath should do more variety. It all seems to be a balancing act. And again, I am not trying to put forward a cookie-cutter conceptualization of mindful curriculums. I am simply presenting the entirety of the playing field in as objective as a way as possible.[18]

Lastly, over the past year, I had the opportunity to consider methodological questions surrounding the ethics of conducting an experiment that involves the instruction of mindfulness meditation. Teaching mindfulness is quite different from teaching mathematics or soccer for you are teaching people powerful introspective tools and discussing matters of utmost concern such as suffering, fulfillment, and being kind. Therefore, it is not uncommon that participants bring strongly negative and strongly positive experiences into the student-teacher relationship. While positive episodes are exciting and the cause of celebration and congratulations, negative episodes are tricky and stretch the framework of a formal experimental design and my own moral directives.

For example, over the coarse of the experiment, two participants came to me in total or near total emotional breakdown. One was crying uncontrollably everyday and one was extremely anxious and distracted. These participants' experience was the result of their life circumstances (girl friend problems, etc.) and not the result of the mindfulness practice per say, but they came to me for they felt comfortable talking with me. During both encounters, I was torn. As I am an experienced mindfulness teacher, I could certainly give the participants personal guidance that may help them through their traumatic experience. However, if I did this, I would surely be deviating from the curriculums that I had laid out for them and their groups. Thus, if I helped them, I would have to discount any data that I collected from them for the rest of the study. However, in both cases I decided to help them for I deemed their happiness and success a higher priority than any research I had in mind.

What I gleam from this discussion is an emerging ethical framework for conducting research that compares mindfulness curriculums. The basic rule-of-thumb that I landed one was: stick to the decided upon curriculum no matter what students say. However, if a student comes to you in an abnormally high level of

[18] Also, see discussion on pages 15-16.

distress, drop the curriculum and do everything you can to help the participant. It seems reasonable to me to pull out all the bells and whistles if someone is in serious pain, rather than coldly stick to your hypotheses.

Appendix A

During the first experiment, I handed out the Five Facet Mindfulness Questionnaire developed by Baer et al., 2006 at the beginning and at the end. Here is a full version of this questionnaire.

(There are two statements below that are marked with *'s. These statements were developed by the researcher and do not appear in the original Five Facet Mindfulness Questionnaire. These statements will be included because they are especially relevant to the study's hypothesis).

Five Facet Mindfulness Questionnaire

Please circle the descriptor that best describes your own opinion of what is generally true for you.

When I'm walking, I deliberately notice the sensations of my body moving.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I'm good at finding words to describe my feelings.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I criticize myself for having irrational or inappropriate emotions.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I perceive my feelings and emotions without having to react to them.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

When I do things, my mind wanders off and I'm easily distracted.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

When I take a shower or bath, I stay alert to the sensations of water on my body.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I can easily put my beliefs, opinions, and expectations into words.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

***I am overwhelmed by my negative emotional experiences.**
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I watch my feelings without getting lost in them.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I tell myself shouldn't be feeling the way I'm feeling.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

It's hard for me to find the words to describe what I'm thinking.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I am easily distracted.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I pay attention to sensations, such as the wind in my hair or sun on my face.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I have trouble thinking of the right words to express how I feel about things.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I make judgments about whether my thoughts are good or bad.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I find it difficult to stay focused on what's happening in the present.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

In difficult situations, I can pause without immediately reacting.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

It seems I am "running on automatic" without much awareness of what I'm doing.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

When I have distressing thoughts or images, I feel calm soon after.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I tell myself that I shouldn't be thinking the way I'm thinking.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I notice the smells and aromas of things.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

Even when I'm feeling terribly upset, I can find a way to put it into words.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I rush through activities without being really attentive to them.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

When I have distressing thoughts or images I am able just to notice them without reacting.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I think some of my emotions are bad or inappropriate and I shouldn't feel them.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

My natural tendency is to put my experiences into words.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

***I am able to remain 'level-headed' during negative emotional experiences.**
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

When I have distressing thoughts or images, I just notice them and let them go.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I do jobs or tasks automatically without being aware of what I'm doing.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I pay attention to how my emotions affect my thoughts and behavior.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I can usually describe how I feel at the moment in considerable detail.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I find myself doing things without paying attention.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

I disapprove of myself when I have irrational ideas.
Never or very rarely true. Rarely true. Sometimes true. Often true. Very often or always true.

In order to analyze the data from this questionnaire, I decided to pick out four prompts that represented what I might associate with a competency in practice in daily life that I would tally up. The four prompts that I chose were:

1. When I'm walking, I deliberately notice the sensations of my body moving.
2. I pay attention to sensations, such as the wind in my hair or sun on my face.

3. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
4. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.

I also picked four prompts from this questionnaire that represented what I might associate with a competency with practice during emotional experience. The four prompts that I chose along these lines were:

A. I am overwhelmed by my negative emotional experiences.
B. I criticize myself for having irrational or inappropriate emotions.
C. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
D. I am able to remain 'level-headed' during negative emotional experiences.

I translated participant responses into the numbers 1-5 (1 being 'never or rarely true' and 5 being 'very often or always true'; except for prompts A and B, where 1 was 'very often or always true' and 5 as never or rarely true,' simply because of the nature of the prompts). I then took averages of the following number clusters:

Breath Group: pre emotion scores
Breath Group: post emotion scores

Full Grid Group: pre emotion scores
Full Grid group: post emotion scores

Breath Group: pre daily life scores
Breath Group: post daily life scores

Full Grid Group: pre daily life scores
Full Grid group: post daily life scores

These are the averages that are presented in Tables 2 and 3. I calculated the change in each groups score by subtracting the pre scores from the post scores.

Appendix B

Here are full versions of the Info Sheets that were used during the first experiment. As the Breath group did not learn the full grid, their info sheet was somewhat simpler (which, to be honest, is part of what made me realize that the first experiment wasn't perfect).

Breath Group Info Sheet:

By the end of the semester, please turn in at least two of these significant experience info sheets to Toby via email (tosola@vassar.edu), mail (Box 2210), or just bring a hard copy to class (easiest option, if you ask me!).

Applying Concentration, Clarity, and Equanimity to Relatively Intense, Pleasurable or Painful, Physical or Emotional Experience

You do not need to answer all of these questions if you don't want to.

Name _____

Date _____

Date of experience _____

Location of experience _____

Was the experience Pleasurable or Painful?

Was the experience Emotional, Physical, or both?

Did you 'turn toward' or 'turn away' from the experience?

Do you think engaging your meditation technique affected your experience in any way? If so, how?

Are you happy with your 'turning away/turning towards' choice or might you try something else during future experiences?

Is there anything else that you think the researcher might like to know?

Thank you, you're awesome!!!!!!!

Full Grid Group Info Sheet:

By the end of the semester, please turn in at least two of these significant experience info sheets to Toby via email (tosola@vassar.edu), mail (Box 2210), or just bring a hard copy to class (easiest option, if you ask me!).

Applying Concentration, Clarity, and Equanimity to Relatively Intense, Painful or Pleasurable, Emotional or Physical Experience

You do not need to answer all of these questions if you don't want to.

Name _____

Date _____

Date of experience _____

Location of experience _____

Was the experience Painful or Pleasurable?

What sensory elements comprised the experience? (Please use our agreed upon terminology: see in, hear in, feel in, see out, hear out, and feel out).

Did you 'turn toward' or 'turn away' from the experience?

What was your specific ‘focus range’? (Again, please use our agreed upon terminology).

Do you think engaging the meditation technique affected your experience in any way? If so, how?

Are you happy with your choice of focus range or might you try something else during future experiences?

Is there anything else that you think the researcher might like to know?

Thank you, you’re awesome!!!!!!!

Appendix C

On page 5, I say the following:

> *I thought that the Full Grid group would report more suffering reduction during emotional experience because they would get practice being mindful of themselves (mental image, mental talk, and emotional body sensation), which – to over simplify - is what is necessary in order to reduce suffering during emotional experience.*

In this appendix, I wish to flesh out this oversimplification in order to make my position more accurate.

It is not true that one needs to be mindful of (concentrate, clarify, and equanimize) all or even part of an emotional experience in order to reduce one's suffering. After all, the instructions for practice during an emotional experience are to turn toward *or* turn away. You can absolutely turn away and experience suffering reduction. A more sophisticated understanding of mindful awareness is needed in order to understand exactly why.

While engaging a mindfulness technique, the type of sensory experience that one chooses as her object of meditation is only relevant to one's concentration power and sensory clarity. This is because when one chooses her object of meditation, what one is deciding is what sensory experience she is coming back to (concentration power) and what sensory experience she is noticing the details of (sensory clarity).

On the other hand, the type of sensory experience that one chooses is not relevant to one's equanimity. This is because no matter what is chosen as the object of meditation, *any and all forms of sensory experience are allowed to come and go with out push or pull (equanimity).*

For example, let's say you chose physical sound as your object of meditation. This means that you bring your attention back to physical sound if it happens to wander (concentration power). This also means that you try to notice the details of the sound that you are listening to (sensory clarity). This also means that you allow the sound to come and go without push or pull (equanimity). *And this also means that you allow ALL other forms of sensory experience (such as thoughts, body sensations, ect.) to come and go without push or pull (equanimity).* Can you see how concentration and sensory clarity are being applied to the object but that equanimity is being applied to the object *and* everything else?

We now have a more sophisticated understanding of mindful awareness, so we can return to the task at hand. The reason that suffering reduction can occur whether you turn toward or turn away from an emotional experience is because the attentional skill that is most important for suffering reduction is equanimity (and as we've just learned, all forms of sensory experience, no matter what kind is chosen as the object of meditation, get greeted with equanimity). In other words: you're having an emotional experience; you decide to listen to sound; this means you concentrate on, clarify, and equanimize the sounds around you; this also means that you greet the emotional experience with equanimity; as you are greeting the emotional experience with equanimity, your suffering will drop.

So really what I am saying in the sentence above is that I thought the Full Grid group would report more suffering reduction during emotional experience because they would get practice greeting themselves (mental image, mental talk, and emotional body sensation) with *equanimity*, which – to *not* over simplify! - is what is necessary in order to reduce suffering during emotional experience.

I can't help but now throw the poor reader for yet another spin (again, actually practicing mindfulness will certainly aid the understanding of all of the ideas presented in this piece; it is one thing to 'think' and quite another to 'taste').

The three core attentional skills of mindful awareness are, as you may expect, intimately related. For example, it is often easier to equanimize an experience if one is clear about the experience; it is often easier to clarify an experience if one is concentrated on it; it is often easier to concentrate on an experience if one is clear about the experience; etc. Therefore, if one is interested in suffering reduction during emotional experience, it is better to pick the emotional experience itself as an object of meditation for then the sensory clarity, concentration power, and equanimity will all interact and mutually support in order to deepen the level of equanimity (and equanimity is the key attentional skill for achieving suffering reduction). In other words, as concentration power and sensory clarity can support the development of equanimity, it is a better idea to choose the emotional experience as one's object of meditation if one wants their suffering to decrease.

What this discussion is pointing towards is that the directions for practice during an emotional experience should not be 'turn towards' *or* 'turn away.' Instead, they should be 'turn towards.' You should always turn towards your emotional experience because clarifying and concentrating upon one's emotional experience supports the development of equanimity, which is the most important attentional skill for suffering reduction.

However! This sounds crazy. One of the most common reports from beginning meditation students is that if they turn towards their emotional experience, they are greatly overwhelmed and their suffering actually sky rockets. Even my own personal experience aligns with this trend. When I first began meditating, you wouldn't be able to catch me turning towards. Instead, I exclusively turned away and this turning away worked.

What I gleam from this discussion is the following: At the end of the day, turning towards pain is probably the most robust and powerful technique for suffering reduction. However, especially at the beginning of one's practice, it can be too much to turn toward. Therefore, turning away should be encouraged at this stage (and, as I discussed above the dotted line, turning away certainly works for everything gets greeted with equanimity no matter what).

There is anecdotal evidence in support of this technique hierarchy. At a conference on meditation, technology, and global culture that I attended last summer, I met an astonishing individual with a story that almost caused me to faint. This individual had Trigeminal Neuralgia, a debilitating neurological disorder that causes constant painful sensations in the head akin to spikes being stabbed through one's skull. The disease is called, 'suicide disease' because most people who get the disease commit suicide for there is virtually no treatment or cure for the disease and the pain is (as one might expect) a tad overwhelming.

Briefly, this individual found Shinzen's teaching after being diagnosed with the disease and decided to lock him self in a room for months trying to engage the techniques in a desperate attempt to refrain from suicide. After months of 24/7 practice (it is difficult to sleep when you feel a spike crashing through your skull), the subjectively experienced suffering associated with his symptoms began to decrease dramatically. Over time, the stabbing spikes themselves began to decrease in intensity and in frequency. When I talked to him, he was rarely having stabbing sensations. The individual's doctor told him that his brain had someone and surprisingly began to rewire in a way that mitigated the disease.

And here is what is directly relevant to our discussion: I asked this individual whether he practiced turn toward or turn away and he said without hesitation something like, 'Oh, turn towards. Turn away is simply no match for turn towards, it's a no-brainer.'

We are interested in suffering reduction. Here we have an individual who has probably experienced more pain than all of us combined. I think we should listen to what he has to say. He says that turning toward his pain was far more effective than turning away. To connect this anecdote to our discussion above, I would conjecture that this is because turning towards allows one's concentration power and sensory clarity to boost one's equanimity (which is what is important for suffering reduction).

I know that I have taken the reader through an intellectual flip-flop. This is simply the nature of the beast. The mind, suffering, and attention are all complex critters. I would like to tie together the ideas presented in this appendix in as coherent a way as I can.

Here we see an example of perhaps the most important idea in pedagogy: match the curriculum that you are teaching to the student in front of you.[19] If you have a beginner, present both turning towards and turning away and say that they are equally effective. If you have been working with someone for two years who has been exclusively turning away and is unsatisfied with the amount their suffering is reduced, present and encourage the turning towards technique, perhaps with some of the theory behind the technique that has been discussed above.

[19] This statement closely relates to the discussions on pages 15-16 and 22.

Appendix D

On page BLANK, I said the following:

> *One thing that differed was the variety of experiences that each group got practice meditating upon in class and another thing that differed was the presentation of a conceptual framework for understanding and categorizing the entirety of one's moment-by-moment experience.*

I wish to complexify and make accurate my use of the word, 'entirety.' I do not actually believe that the full grid includes all of the possible kinds of subjective sensory experiences. I think that the full grid is missing at least one type. Namely, I think the full grid is missing, 'non-symbolic thinking.'

Perhaps since the beginning of time and certainly since Edward Titchener presented a Structuralist Psychology, we have been debating the way in which we think. Do we think in words? In images? In unperceivable connectionist networks? As the full grid presents two and only two forms of thought (mental image and mental talk), the full grid has no room for forms of thought that do not fit neatly into either one of these categories.

However, there is robust data on the presence of a variety of forms of thought. I am not in a position nor is this the place for a full review of such literature. Yet I will briefly discuss one example: Russell Hulbert's research on non-symbolic thought. Russell developed an innovative 'beep' methodology in which he gave participants beepers that would go off about five times a day. Participants were instructed to take note of what and how they were thinking during the second or two leading up to the random beep. At the end of every day, participants were asked about their thought processes right before each beep. As you may imagine, such methodology requires extensive training on the part of both interviewers and participants.

Hulbert has conducted several studies with this basic experimental design over the past thirty years. He has found evidence of mental image and mental talk. Importantly for our discussion, he has also found evidence for what he calls 'non-symbolic' thought. Hulbert defines non-symbolic thought as: "its own phenomena… a way of experiencing… a thinking, not a feeling, not an intention… explicit: The "about what" of the thought is plainly apprehended… differentiated: The "what about it" is not general or vague… directly in experience. It is *not* the case that merely the "title" of the thought is experienced and the rest of the thought is subconscious… an unsymbolized thought typically presents itself all at once; there is no rhythm or cadence; no unfolding or sequentiality. The unsymbolized thought presents itself as a unit… unsymbolized thinking *does not include the experience of*

words, images, or any other symbols" (Hulbert, 2011: 295-296, emphasis in the original). Please see Hulbert's book for further discussion.

I only came across Hulbert's research a few months ago, long after I had begun my experiment, so I could not incorporate Hulbert's non-symbolic thinking into the full grid. However, the intersection of Hulbert's research with the kind of mindfulness meditation that I taught my students is, to me, the most exciting launching pad for future research for a number of reasons.[20] First, Hulbert essentially had to teach his participants mindfulness in order to keep track of their thought process. Mindfulness is hard to learn and even harder to teach. People like me have effective teaching strategies for teaching mindfulness. Therefore, I think mindfulness teachers like myself could improve Hulbert-esque beeping experiments with our experience teaching mindfulness. Second, many in the mindfulness community dogmatically believe that people only think in the forms of mental talk and mental image. Therefore, I think Hulbert's research could improve the accuracy of many meditators' conceptualization of their own subjective experience. This might clear up confusion during question and answer sessions and open up mindfulness to people who might have otherwise felt uncomfortable being told that their experience is somehow 'incorrect.'

[20] Also, see discussions on pages 18 and 19 about other opportunities for cross-pollination between mindfulness and the Cognitive Sciences.

Appendix E

During the second experiment, I used my own questionnaire. Here is a full version of this questionnaire.

Make a slash on the lines below each prompt that correspond to your position.

1. I had interesting, deep, and/or meaningful experiences during the in-class, guided meditations.

Agree----------Disagree

2. What we learned reduced my suffering/overwhelm during negative emotional experience.

Agree----------Disagree

3. I was able to practice in daily life.

Agree----------Disagree

4. I can be mindful of (concentrate, clarify, and equanimize) my breath.

Agree----------Disagree

5. I can be mindful of my self (mental image, mental talk, and emotional body sensation).

Agree----------Disagree

6. I can be mindful of the world (physical sight, physical sound, physical body sensation).

Agree----------Disagree

Short Answers:

7. Did you get a chance to practice during a negative emotional experience? If so, please describe (What was your focus range? How did mindfulness affect your experience?).

8. Did you get a chance to practice during daily life? If so, please describe (What was your focus range? How did mindfulness affect your experience?).
9. Did you get a chance to do formal, sitting practice outside of class? If so, please describe (What was your focus range? How did mindfulness affect your experience?).
10. Demographic Info.
    a. Name:
    b. Age:
    c. Gender:
    d. Race:
    e. Does your family make under $50,000/year, between $50,000 and $100,000/year, or over $100,000/year?

I included answers to the short answer questions in my qualitative analysis in the main body of this paper. I used a simple ruler to convert the participant's slash responses into numerical form. The numbers in the tables below roughly correspond to the number of centimeters away from the left edge of the page that the participant chose to put her/his slash. I only gave the participants this questionnaire at the end of the semester for the questions would only make sense at that time. Here is the raw data:

Participant #	Deep (#1)	Emotion (#2)	Daily (#3)	Breath (#4)	Self (#5)	World (#6)
1	9	7	5	10	10	9
2	6	7	7	8	6	8
3	8	9	9	9	6	10
4	5	4	7	8.5	7.5	7
5	6	7	9	4	9	8
6	8	6	5	6	5	5
7	10	10	10	10	7	10
8	9	7	3	9	6	7.5
9	6	5	5	8	8	8
10	10	9	6	4	10	10
11	8.5	10	8	9	9	10
12	6.5	8	8	6	7	9
13	6	8	7.5	8.5	6	8
14	10	7	10	10	8	10

Table 6: Second Experiment Breath Group End-of-Semester Questionnaire Data

Participant #	Deep (#1)	Emotion (#2)	Daily (#3)	Breath (#4)	Self (#5)	World (#6)
1	5	8	10	10	8	8
2	9	8	6	10	6.5	9.5
3	7	7	8	8	8	8
4	6	6	7	8	5	4.5
5	7	4	3	7	8	4
6	8	6	5	4	8	9
7	5	5	8	10	10	10
8	7	5	7	10	10	9
9	10	10	10	10	10	10
10	6	7	4	9	10	4
11	8	10	10	10	10	10
12	10	10	3	9	9.5	4
13	10	8	8	10	7.5	9
14	8	8.5	8	9	8	9
15	8	3	2	7.5	8	3

Table 7: Second Experiment Self Group End-of-Semester Questionnaire Data

Participant #	Deep (# 1)	Emotion (#2)	Daily (#3)	Breath (#4)	Self (#5)	World (#6)
1	8	7	9	9	4	9
2	10	9	7.5	10	7	10
3	8	5	3.5	8	6	6
4	10	3	6.5	9	4	8
5	8	6	5	7	6	8
6	8	10	5	6	4	6
7	9	6	6.5	6	7	8
8	9	5	6	10	7	9
9	8	9	8	9.5	9	6
10	10	7.5	3	8	5	6

Table 8: Second Experiment World Group End-of-Semester Questionnaire Data

And here are various ways that I attempted to analyze the data.

Group	Deep (#1)	Emotion (#2)	Daily (#3)	Breath (#4)	Self (#5)	World (#6)
Breath	7.71	7.43	7.11	7.86	7.46	8.54
Self	7.6	7.03	6.6	8.77	8.43	7.4
World	8.8	6.75	6	8.25	5.9	7.6

Table 9: Second Experiment End-of-Semester Questionnaire Data Question-by-Question Averages

Group Rank	Deep (#1)	Emotion (#2)	Daily (#3)	Breath (#4)	Self (#5)	World (#6)
First	World	Breath	Breath	Self	Self	Breath
Second	Breath	Self	Self	World	Breath	World
Third	Self	World	World	Breath	World	Self

Table 10: Second Experiment End-of-Semester Questionnaire Data Question-by-Question Rankings (i.e. which group's average was the highest, second-highest, and third highest?)

Group	Emotion + Self	Daily + World
Breath	14.89	15.65
Self	15.46	14
World	12.65	13.6

Table 11: Second Experiment End-of-Semester Questionnaire Data. As you can tell from the rest of this piece, I am trying to draw a connection between (1) practicing with components of the self and (2) suffering reduction during emotional experience. I am also trying to draw a connection between (1) practicing with one's physical senses and (2) ease of practice in daily life. In this and the next table, I combine relevant data from my questionnaire to see any pattern.

Group Rank	Emotion + Self	Daily + World
First	Self	Breath
Second	Breath	Self
Third	World	World

Table 11: Second Experiment End-of-Semester Questionnaire Data. Here we see two things: support for my hypotheses and evidence against my hypotheses. We see support for my hypotheses in the 'Emotion + Self' column. This is because the Self group scored highest in this category, which is what I predicted. However, the World group scored lowest in the next column, which is the opposite of what I predicted. As I mentioned on page 7, this could have to do with confidence more than actual ability, but I simply don't know.

References Cited

1. Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self- report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27- 45.
2. Barnes, S., Brown, K. W., Krusemark, E., Campbell, W. K., & Rogge, R. D. (2007). The role of mindfulness in romantic relationship satisfaction and responses to relationship stress. *Journal of Mari- tal & Family Therapy*, *33*, 482–500.
3. Birnie, K., Speca, M., & Carlson, L. E. (2010). Exploring self- compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress and Health: Journal of the Inter- national Society for the Investigation of Stress*, *26*, 359–371.
4. Carlson, E. N. (2013). Overcoming the barriers to self-knowledge: Mindfulness as a path to seeing yourself as you really are. *Perspectives on Psychological Science, 8*(2), 173-186. Retrieved from www.scopus.com
5. Carson, J. W., Carson, K. M., Gil, K. M., & Baucom, D. H. (2004). Mindfulness-based relationship enhancement. *Behavior Therapy*, *35*, 471–494.
6. Cornelius, Randolph. Personal interview. Apr. 2014.
7. Dekeyser, M., Raes, F., Leijssen, M., Leysen, S., & Dewulf, D. (2008). Mindfulness skills and interpersonal behaviour. *Person- ality and Individual Differences*, *44*, 1235–1245.
8. Eberth, J., & Sedlmeier, P. (2012). The effects of mindfulness meditation: A meta-analysis. *Mindfulness, 3*(3), 174-189. Retrieved from www.scopus.com
9. Emanuel, A. S., Updegraff, J. A., Kalmbach, D. A., & Ciesla, J. A. (2010). The role of mindfulness facets in affective forecasting. *Personality and Individual Differences*, *49*, 815–818.
10. Gallagher, Shaun, and Dan Zahavi. *The Phenomenological Mind*. London: Routledge, 2012. Print.
11. Hurlburt, Russell T. *Investigating Pristine Inner Experience: Moments of Truth*. New York: Cambridge UP, 2011. Print.
12. Johnson, Mark. *The Meaning of the Body: Aesthetics of Human Understanding*. Chicago: U of Chicago, 2007. Print.
13. Koole, S. L., Govorun, O., Cheng, C. M., & Gallucci, M. (2009). Pull- ing yourself together: Meditation promotes congruence between implicit and explicit self-esteem. *Journal of Experimental Social Psychology*, *45*, 1220–1226
14. Lakey, C. E., Kernis, M. H., Heppner, W. L., & Lance, C. E. (2008). Individual differences in authenticity and mindfulness as predic-tors of verbal defensiveness. *Journal of Research in Personality*, *42*, 230–238.
15. Papies, E. K., Barsalou, L. W., & Custers, R. (2012). Mindful atten- tion prevents mindless impulses. *Social Psychological & Person- ality Science*, *3*, 291–299.
16. Parker, J. C., Gilbert, G. S., & Thoreson, R. W. (1978). Reduction of autonomic arousal in alcoholics: A comparison of relaxation and meditation techniques. *Journal of Consulting and Clinical Psychology, 46*(5), 879-886. Retrieved from www.scopus.com
17. Peng, C. -., Henry, I. C., Mietus, J. E., Hausdorff, J. M., Khalsa, G., Benson, H., & Goldberger, A. L. (2004). Heart rate dynamics during three forms of meditation. *International Journal of Cardiology, 95*(1), 19-27. Retrieved from www.scopus.com
18. Rose, Nikolas S., and Joelle M. Abi-Rached. *Neuro: The New Brain Sciences and the Management of the Mind*. Princeton, NJ: Princeton UP, 2013. Print.
19. Price, Donald D., and James J. Barrell. *Inner Experience and Neuroscience: Merging Both Perspectives*. Cambridge, MA: MIT, 2012. Print.
20. Reed, Edward. *Encountering the World: Toward an Ecological Psychology*. New York: Oxford UP, 1996. Print.

21. Sedlmeier, P., Eberth, J., Schwarz, M., Zimmermann, D., Haarig, F., Jaeger, S., & Kunze, S. (2012). The psychological effects of meditation: A meta-analysis. *Psychological Bulletin, 138*(6), 1139-1171. Retrieved from www.scopus.com
22. Shapiro, S. L., Schwartz, G. E., & Bonner, G. (1998). Effects of mindfulness-based stress reduction on medical and premedical students. *Journal of Behavioral Medicine*, *21*, 581–599.
23. Tomasino, B., Fregona, S., Skrap, M., & Fabbro, F. (2013). Meditation-related activations are modulated by the practices needed to obtain it and by the expertise: An ALE meta-analysis study. *Frontiers in Human Neuroscience,* (JAN), 1-14. Retrieved from www.scopus.com
24. Vago, D. R., & David, S. A. (2012). Self-awareness, self-regulation, and self-transcendence (S-ART): A framework for understanding the neurobiological mechanisms of mindfulness. *Frontiers in Human Neuroscience,* (OCTOBER 2012) Retrieved from www.scopus.com
25. Wachs, K., & Cordova, J. V. (2007). Mindful relating: Exploring mindfulness and emotion repertoires in intimate relationships. *Journal of Marital & Family Therapy*, *33*, 464–481.
26. Warrenburg, S., Pagano, R. R., Woods, M., & Hlastala, M. (1980). A comparison of somatic relaxation and EEG activity in classical progressive relaxation and transcendental meditation. *Journal of Behavioral Medicine, 3*(1), 73-93. Retrieved from www.scopus.com